REMARKS:

Claims 1 and 22 are amended. Support for the amendments to claims 1 and 22 can be found on page 8, lines 26-30 of the Applicant's specification. Claims 1-25 and 31-32 are pending in the application. Reexamination and reconsideration of the application, in view of the following remarks, are respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. §102:

Claims 1-2, 4-6, 7-15, 19, 22, and 31-32 stand rejected under 35 U.S.C. §102(e) as being anticipated by Moring et al. (U.S. Patent No. 6,159,368). The Applicant respectfully traverses this rejection.

Claim 1, as amended, is as follows:

> An assembly for a microarray assay device, comprising:
>
> a microplate having a plurality of discrete array formation areas each formed of a flexible material and activated for immobilization of biorecognition materials, and barriers formed between the array formation areas to restrict fluid cross-flow therebetween; and
>
> a vacuum fixture defining a top surface and an interior chamber connectable to a vacuum source, wherein the microplate is mounted on the top surface of the vacuum fixture so that the array formation areas conform to the top surface of the vacuum fixture, the vacuum fixture further defining a plurality of orifices connected to the interior chamber and opening at the top surface at locations corresponding to the array formation areas when the microplate is mounted on the top surface of the vacuum fixture, wherein each of the orifices connects directly to both the top surface and the interior chamber.

Claim 1 was amended to clarify that each of the orifices that is connected to the interior chamber is also directly connected to the top surface. Applicant respectfully submits that Moring cannot anticipate claim 1, because Moring fails to teach that each orifice is connected directly to both the top surface and the interior chamber. In Moring, the orifices that are connected to the interior chamber are not directly connected to the top surface. Instead, the apertures (orifices) 28 extend through the surface 25 of collection plate 24. (Moring, column 22, lines 17-21; Figures 2 and 3). A separate outlet port 16c (orifice) has an opening at the top surface at a location corresponding to the filter element 8a (the array formation area). (Moring, column 18, lines 4-25; column 21, lines 42-51; Figure 2).

Moring cannot make instant claim 1 obvious, since the present invention achieves unexpected results. Moring has no teaching or suggestion whatsoever that each orifice is connected directly to both the top surface and the interior chamber. In the present invention, fixture 32 has an interior chamber 34 connectable to a vacuum source via channels 34a, and a plurality of orifices 36 located on the top surface and connected to the interior member. The orifices 36 are located within the depressions 38 in the embodiment of Fig. 3(a), or at locations corresponding to the bottom of the wells 16 in the embodiment of Fig. 3(c). When a vacuum is drawn in the interior chamber 34, the vacuum is communicated via the orifices 36 to create a negative pressure to hold the bottom of the wells 16 firmly against the top surface of the fixture 32. (Applicant's specification, at p. 8, line 26-p. 9, line 1; Figure 4). Thus, the present invention offers the advantage, that even though the tray 12 is formed of a flexible material, the bottom portions of the wells 16 maintain a high precision flatness to facilitate high-resolution printing and reading of the microarrays. (Applicant's specification, at p. 9, lines 1-4; Figure 4).

The vacuum fixture design of the present invention offers a further advantage in that it may be provided with a micromixing capability by connecting the vacuum chamber 34 to a peristaltic pump which generates alternating positive

and negative pressures. As shown in Figs. 5(a) and 5(b), the alternating pressures are communicated by the orifice 36 to the space between the surface of the fixture 32 and the bottom of the well 16, causing the flexible bottom portion of the well to be alternately pushed up and pulled down. This creates a micromixing effect to uniformly mix the solution held in the well. (Applicant's specification, at p. 9, lines 16-22; Figures 5a and 5b). The orifice design of Moring would presumably prohibit alternating pressures, since alternating positive and negative pressure could cause the flow through in the closed bottom well 26 to back up into the filter element 8a (Moring; Figure 3).

In light of the foregoing, Applicant respectfully submits that Moring could not have anticipated or rendered obvious claim 1, because Moring fails to teach or suggest each and every claim limitation. Claims 2, 4-6, 7-15, and 19 depend from claim 1 and cannot be anticipated or rendered obvious for at least the same reasons as claim 1. Withdrawal of these rejections is thus respectfully requested.

Claim 22, as amended, is as follows:

> An assembly for a microarray assay device, comprising:
>
> a microplate having a plurality of wells formed of a flexible material and having continuous flat bottoms; and
>
> a vacuum fixture defining a top surface and an interior chamber connectable to a vacuum source, wherein the microplate is mounted on the top surface of the vacuum fixture so that the bottom of each well conforms to the top surface of the vacuum fixture, the vacuum fixture further defining a plurality of orifices connected to the interior chamber and opening at the top surface at locations corresponding to the bottoms of the wells when the microplate is mounted on the top surface of the vacuum fixture, wherein each of the orifices connects directly to both the top surface and the interior chamber.

Claim 22 requires the similar limitation that each of the orifices connects directly to both the top surface and the interior chamber. Therefore, Moring could not have anticipated or rendered obvious claim 22 for the same reasons discussed above. Claims 31 and 32 depend from claim 22 and cannot be anticipated or rendered obvious for at least the same reasons as claim 22. Withdrawal of these rejections is thus respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103:

Claims 3 and 16-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Moring in view of Mathus et al. (U.S. Patent No. 5,858,309). Applicant respectfully traverses this rejection.

Claims 3 and 16-18 depend from claim 1, and as such include all the limitations of claim 1, and therefore cannot be rendered obvious over Moring for at least the same reasons discussed above. Mathus cannot remedy the defect of Moring and is not relied upon by the Examiner for such. Instead, the Examiner cites Mathus for teaching microplates and methods for manufacturing microplates, and more specifically, for teaching microplates with a material thickness of 7.5 mils. Mathus neither teaches nor suggests orifices that are connected directly to both the top surface of a vacuum fixture and the interior chamber, which is connectable to a vacuum source.

In light of the foregoing, Applicant respectfully submits that Moring and Mathus could not have made claims 3 and 16-18 obvious, because the combination of references fails to teach or suggest each and every claim limitation. Withdrawal of this rejection is thus respectfully requested.

Claims 20, 21, 23, and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Moring in view of Mohan et al. (U.S. Patent No. 5,888,830). Applicant respectfully traverses this rejection.

Claims 20-21 and 23-24 depend from claims 1 and 22, respectively, and as such include all the limitations of claims 1 and 22, respectively, and therefore cannot be rendered obvious over Moring for at least the same reasons discussed above. Mohan cannot remedy the defect of Moring and is not relied upon by the Examiner for such. Instead, the Examiner cites Mohan for teaching a capping plate with a plurality of caps that corresponds to an array area and seals the reaction vessel and a cap that has access to an inlet and outlet port and the microplate assembly has a temperature control element. Mohan neither teaches nor suggests orifices that are connected directly to both the top surface of a vacuum fixture and the interior chamber, which is connectable to a vacuum source.

Instead, Mohan teaches a drainage channel block 34 with channels 65 aligned with the male Luer connectors 53 of the valve inserts 51 in the manifold valve block 30 so that when the valve inserts are opened, the liquid therein simultaneously drains into the array of interconnected channels. (Mohan, column 11, line 58-column 12, line 1; Figures 7-9). Thus, instead of a vacuum fixture having a top surface corresponding to the well bottoms or array formation areas, Mohan teaches drainage channels simply aligned with the passages 50 of the valve block.

Similarly, a cleavage block 120, which substitutes for the channel block 34 after the washing step, does not have a top surface conforming to the passages 50. The cleavage block includes a vial tray rack 122 mounted in a cavity 123 of the cleavage block 120. The vial rack 122 is loaded with vials 128 for receiving the reaction products from the reaction vessels 12 upon simultaneously opening the valves 51 in the manifold valve block 30. (Mohan, column 13, lines 55-65; Figures 1-3 and 23). Thus, instead of a vacuum fixture having a top surface corresponding to the well bottoms or array formation areas, Mohan teaches vials 128 simply aligned with the passages 50 of the valve block.

In addition, neither the channel block 34 nor the cleavage block 120 has a plurality of orifices connected to the interior chamber and opening at the top surface at locations corresponding to the array formation areas or the bottoms of wells, wherein each of the orifices connects directly to both the top surface and the interior chamber. The channel block 34 does not have an internal chamber and does not have orifices corresponding to each passageway. Instead, channels of the channel block are simply aligned with the passages 50 of the valve block to allow the drainage of liquid when the valves are open and the vacuum is applied to the channels. (Mohan, column 11, lines 58-67).

Similarly, the cleavage block does not have orifices corresponding to each passageway. Instead, with the opening of the insert valves 51, a vacuum is applied to the single quick connect fitting 60 by the vacuum pump 39 which causes the solvent in the reaction vessels 12 to flow into the array of ninety-six vials 128. (Mohan, column 15, lines 2-10). Therefore, Mohan does not teach or suggest the vacuum fixture of claims 20-21 and 23-24.

In light of the foregoing, Applicant respectfully submits that Moring and Mohan could not have made claims 20, 21, 23, and 24 obvious, because the combination of references fails to teach or suggest each and every claim limitation. Withdrawal of this rejection is thus respectfully requested.

Claim 25 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Moring in view of Stylli et al. (U.S. Patent No. 5,858,309). Applicant respectfully traverses this rejection.

Claim 25 depends from claim 22, and as such include all the limitations of claim 22, and therefore cannot be rendered obvious over Moring, for at least the same reasons discussed above. Stylli cannot remedy the defect of Moring and is not relied upon by the Examiner for such. Instead, the Examiner cites Stylli for the teaching of a peristaltic pump. Stylli neither teaches nor suggests anything related

to vacuum fixtures, much less vacuum fixture containing orifices, wherein each of the orifices connects directly to both the top surface and the interior chamber.

In light of the foregoing, Applicant respectfully submits that Moring and Stylli could not have made claim 25 obvious, because the combination of references fails to teach or suggest each and every claim limitation. Withdrawal of this rejection is thus respectfully requested.

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, in view of the foregoing remarks, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6851 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
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